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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/579,691

**Applicant(s)**

IKEDA ET AL.

**Examiner**

Vip Patel

**Art Unit**

2889

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)
- Paper No(s)/Mail Date 5/06
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**Claim Rejections - 35 USC § 102**

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1-5, 7, 8, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated  
Kawamura Hisayuki (JP 2000-315581) of record by Applicant.

Regarding claim 1, Kawamura teaches in figure 1 and paragraphs 37-43 a light emitting element (100) comprising a plurality of layers interposed between a pair of electrodes (10, 22) opposed to each other, wherein at least one of the plurality of layers is formed of a layer containing a light emitting material (16), and wherein the layer containing the light emitting material is interposed between a layer (20) containing an oxide semiconductor or metal oxide and a material having a higher hole transporting property than an electron transporting property, and a layer (12) containing an oxide semiconductor or metal oxide and a material having a higher electron transporting property than a hole transporting property.

Regarding claim 2, Kawamura teaches a pixel portion.

Regarding claim 3, Kawamura teaches a light emitting element (100) comprising a plurality of layers interposed between a pair of electrodes (10, 22) opposed to each other, wherein at least one of the plurality of layers is formed of a layer containing a light emitting material (16), and wherein the layer containing the light emitting material is interposed between a layer (20) containing an oxide semiconductor or metal oxide and a material having a higher hole transporting property than an electron transporting property, and a layer (12) containing an oxide semiconductor or metal oxide, a material having a higher electron transporting property than a hole transporting property and a material which can donate an electron 25 to the material having a higher electron transporting property than a hole transporting property.

Regarding claim 4, Kawamura teaches a pixel portion.

Regarding claim 5, Kawamura teaches a light emitting element comprising: a pair of electrodes; and first to third layers sequentially laminated between the pair of electrodes, wherein the first layer contains an oxide semiconductor or metal oxide and a material having a higher hole transporting property than an electron transporting property, wherein the second layer contains a light emitting material, and wherein the third layer contains an oxide semiconductor or metal oxide and a material having a higher electron transporting property than a hole transporting property.

Regarding claim 7, Kawamura teaches a pixel portion.

Regarding claim 8, Kawamura teaches a light emitting element comprising: a pair of electrodes; and 20 first to third layers sequentially laminated between the pair of electrodes, wherein the first layer contains an oxide semiconductor or metal oxide and a

material having a higher hole transporting property than an electron transporting property, wherein the second layer contains a light emitting material, and 25 wherein the third layer contains an oxide semiconductor or metal oxide, a material having a higher electron transporting property than a hole transporting property, and a material which can donate an electron to the material having a higher electron transporting property than a hole transporting property.

Regarding claim 10, Kawamura teaches a pixel portion.

### **Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

If this application currently names joint inventors, in considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 11, 13, 14, 16, 21, 22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamura Hisayuki (JP 2000-315581) in view of Leo et al. (US 2005/0236973) of record by Applicant.

Regarding claims 11, 14, and 21, Kawamura teaches all of the claimed limitations, including the claimed type of layers, but not the use of four (4+) layers. Further

regarding claim 11, Leo discloses a light emitting element comprised of, in part, four layers between the electrodes, the additional layers added for the purpose of improving electron and/or hole injection. Hence, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the multiple layers of Leo in the display of Kawamura for the purpose of improving electron and/or hole injection.

Regarding claim 22, the material choice for the layers is an obvious choice in design. Regarding claims 13, 16, and 24 Kawamura teaches a pixel portion.

Claims 6 and 9, 12, 15, and 23 rejected 103 KAWAMURA HISAYUKI (JP 2000-315581) in view of Kido JP 10-270171 of record by Applicant.

Regarding claims 6 and 9, Kawamura discloses all of the claimed limitations except for the use of molybdenum oxide and 4,4'-bis[N-(1-naphthyl)-N-phenylamino]biphenyl in the first layer. Further regarding claims 6 and 9, Kido teaches the use of molybdenum oxide and 4,4'-bis[N-(1-naphthyl)-N-phenylamino]biphenyl in a light emitting device for the purpose of improving electron and/or hole injection. Hence, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the molybdenum oxide and 4,4'-bis[N-(1-naphthyl)-N-phenylamino]biphenyl of Kido in the display of Kawamura for the purpose of improving electron and/or hole injection.

Claims 12, 15, and 23 rejected 103 KAWAMURA HISAYUKI (JP 2000-315581) in view of Leo et al. (US 2005/0236973 and Kido JP 10-270171 of record by Applicant.

Regarding claims 12, 15, and 23, Kawamura in view of Leo discloses all of the claimed limitations except for the use of molybdenum oxide and 4,4'-bis[N-(1-naphthyl)-N-phenylamino]biphenyl in the first layer. Further regarding claims 12, 15, and 23, Kido teaches the use of molybdenum oxide and 4,4'-bis[N-(1-naphthyl)-N-phenylamino]biphenyl in a light emitting device for the purpose of improving electron and/or hole injection. Hence, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the molybdenum oxide and 4,4'-bis[N-(1-naphthyl)-N-phenylamino]biphenyl of Kido in the display of Kawamura and Leo for the purpose of improving electron and/or hole injection.

Claims 17-20, and 25-32 are rejected 103 KAWAMURA HISAYUKI (JP 2000-315581) in view of Leo et al. (US 2005/0236973 and Kido JP 10-270171 of record by Applicant.

Regarding independent claims 17, 25, and 29, Kawamura teaches all of the claimed limitations, including the claimed type of layers, but not the use of four (4+) layers and a layer having an oxide semiconductor or metal oxide and a material having a higher hole transporting property than an electron transporting property. Further regarding claims

17, 25, and 29, Leo discloses a light emitting element comprised of, in part, multiple layers between the electrodes, the additional layers added for the purpose of improving electron and/or hole injection.

Further regarding claims 17, 25, and 29, Kido discloses a light emitting element comprised of, in part, a layer having an oxide semiconductor or metal oxide and a material having a higher hole transporting property than an electron transporting property for the purpose of improving electron and/or hole injection. Hence, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the multiple layers of Leo and the oxide layer of Kido in the display of Kawamura for the purpose of improving electron and/or hole injection.

Regarding claims 18, 26 and 30, the material choice for the layers is an obvious choice in design.

Regarding claims 19, 27 and 31 Kido teaches the use of molybdenum oxide and 4,4'-bis[N-(1-naphthyl)-N-phenylamino]biphenyl. The reason for combining is the same as for claims 17, 25, and 29 above.

Regarding claims 20, 28 and 32 Kawamura teaches a pixel portion.



### **Contact Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vip Patel whose telephone number is (571) 272-2458. The examiner can normally be reached on 5.30am- 2pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Toan Ton can be reached on (571) 272-2303. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**/Vip Patel/  
Primary Examiner  
AU 2889**